A NEW SPECIES OF *AMAUROBIOIDES* O.P.-CAMBRIDGE (ANYPHAENIDAE: ARANEAE) FROM SOUTH AUSTRALIA

D.B. HIRST

Hirst, D.B. 1993 11 11: A new species of *Amaurobioides* O.P.-Cambridge (Anyphaenidae: Araneae) from South Australia. *Memoirs of the Queensland Museum* **33**(2): 529-532. Brisbane. ISSN 0079-8835.

The littoral spider *Amaurobioides isolatus* sp. nov. is described from South Australia and is the first new species of the genus from the Australian mainland. The male palp of *A. litoralis* Hickman is re-illustrated. Biogeography is discussed. □*Araneae, Anyphaenidae, Amaurobioides, new species.*

David B. Hirst, South Australian Museum, North Terrace, Adelaide, South Australia 5000, Australia; 6 November, 1992.

The genus *Amaurobioides* O. Pickard-Cambridge, 1883 occurs in New Zealand (Cambridge, 1883), Campbell Island (Hogg, 1909), South Africa (Hewitt, 1917) and was reported from Tasmania (Hickman, 1949) and Chile (Forster, 1970). Forster (1975) included the south-east coast of Australia in the distribution of the genus but that was not cited by Main (1981) or Davies (1986). The specimen(s) to which Forster (1975) referred were deposited in the Australian Museum, Sydney (AM) but were not labelled as *Amaurobioides* (unpublished data) and have not been found (pers. comm., M. Gray). No further material has been reported from mainland Australia. Once *Amaurobioides* was found on the rocky shoreline of the eastern side of Gulf St Vincent in South Australia , deliberate searching in similar habitats on Eyre Peninsula, Fleurieu Peninsula and Kangaroo Island showed the species was widespread.

Types of *A. litoralis* Hickman, 1949 (syntype series of 1 ♂ and 3 ♀♀ from Tasmania) deposited in AM, were examined. Hickman made no special type designations but the male seen (AM KS6410) is labelled 'Holotype'. Hence, the label designation is invalid (Art. 73iii). The series also includes two females of an undescribed species (Forster, 1970). Forster, when noting that this type material comprised two sympatric species, stated that the larger form was *A. litoralis* while the smaller form was undescribed.

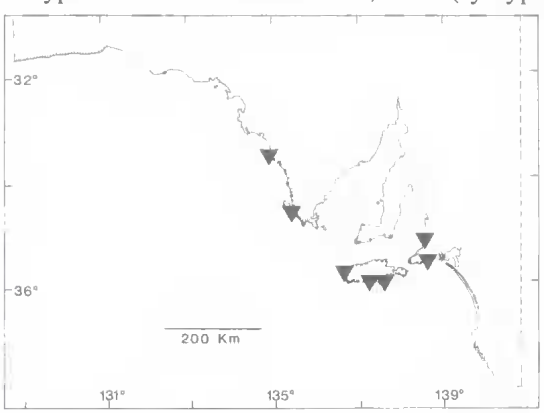


FIG. 1. Southern portion of South Australia showing the distribution of *Amaurobioides isolatus*. Shaded coastline may include suitable habitats.

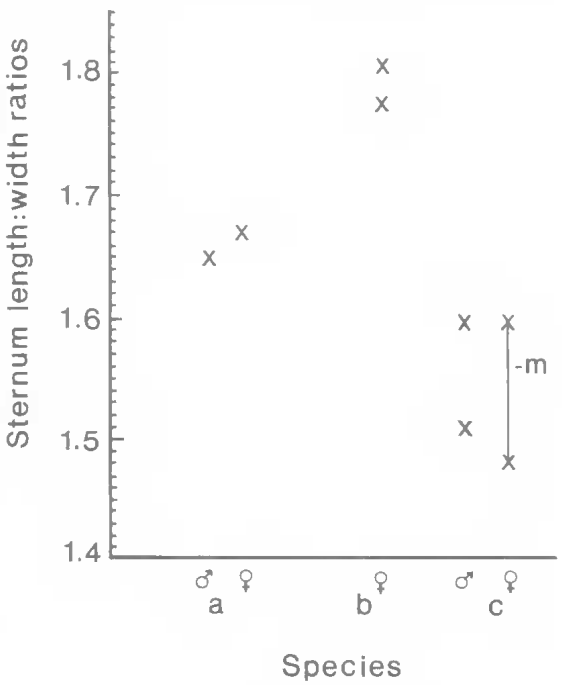


FIG. 2. Comparison of sternum length: width ratios: a, b, *A. litoralis*: small form (a); large form (b); c, *A. isolatus*. m, mean.

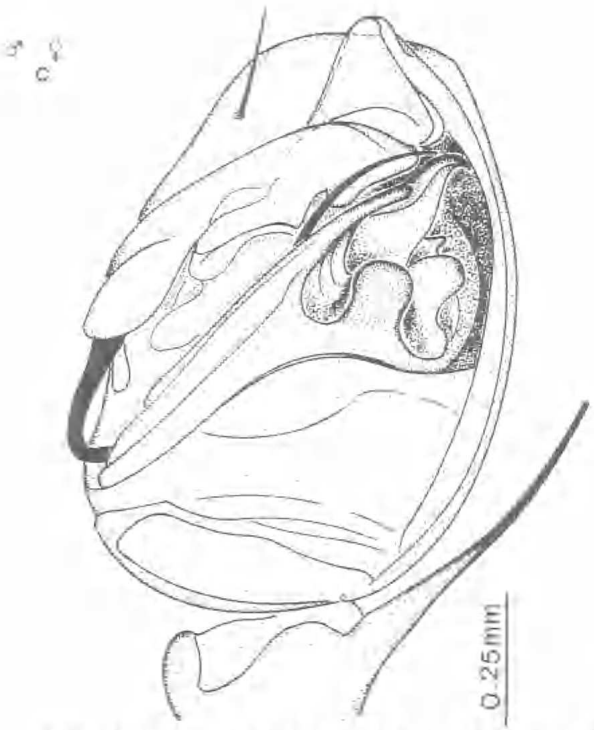


FIG. 3. *A. litoralis*. Tibial apophysis and cymbium of syntype ♂ AM KS6410, ventral.

The ♂ is similar in size to the sole smaller ♀ of the type series, and not to the two larger ♀♀ as suggested by Forster (also captions for figures of the two forms appear to be transposed as the larger specimen figured is called the small form). This is supported by comparisons of the sternum length:width ratio (Fig. 2). Ratios: ♂, 1.65 and smaller type ♀ 1.67; larger ♀♀, 1.77, 1.81; ♀ *A. isolatus* 1.48-1.60 (n=14, mean =1.56) and 2 ♂♂, 1.51, 1.60. Although based only on Australian material seen, the conspecific ♂ of the larger and undescribed form would probably attain a ratio in excess of 1.70.

The ♂ palp of *A. litoralis* is re-illustrated here; the ♀ epigynum was adequately illustrated in Forster (1970, figs 487, 488).

METHODS AND MATERIALS

Hairs are omitted from illustrations. ♀ genitalia were dissected then cleared in lactic acid. All measurements are in millimetres. *Abbreviations*: CL, carapace length; CW, carapace width; AL; abdomen length; AW, abdomen width, MOQ, median ocular quadrangle; aw, anterior width; pw, posterior width; L or l, length, W, width; K.I., Kangaroo Island; DH, D. Hirst.

Amaurobioides isolatus sp. nov.
(Figs 1, 2, 4-9, Table 1)

Material Examined

TYPES. Holotype ♂, Blanche Point, 35°15'S, 138°28'E, 1.iii.1986, DH, N1992206. Paratypes: allotype ♀, same data as above, N1992207; ♀ (with spiderlings), Elliston, 33°39'S, 134°53'E, 31.iii.1987, DH, D. Lee, N1992218; ♀, juv., same data, N1992216-7; ♀, 5 penult. ♂, 2 penult. ♀, same data as holotype but 25.i.1986, N1992208-15; penult. ♀, Petrel Cove, 35°36'S, 138°36E, 1.ii.1991, DH, N1992219; ♀, 4 juv., Point Avoid, 34°41'S, 135°19'E, 31.iii.1987, DH, D. Lee, N1992221; ♀ (with spiderlings), juv., same data, N1992220; 2 ♀, juv., Point Ellen, K.I., 36°00'S, 137°11'E, 10.xi.1987, DH, N1992222-3; ♀ (with eggsac), Point Tinline, K.I., 35°59'S, 137°37'E, 11.xi.1987, DH, N1992224; ♂ ♀, Port Willunga, 35°16'S, 138°28'E, in retreats 0.5m above base of large rock on beach, 14.vi.1992, DH, N1992234-5; 4 ♀, juv., West Bay, K.I., 35°54'S, 136°32'E, 6.xi.1987, D, N1992225-9. All in South Australia and deposited in South Australian Museum.

Diagnosis

The ♂ of *A. isolatus* is recognised by the shape of the primary conductor. *A. isolatus* further differs from the two Tasmanian species in having the sternum relatively broader while the ♀ epigynum is smaller and less sclerotised. The ♂ has spination of tibia I identical to the ♀, a feature shared with *A. maritimus* O.P.-Cambridge, from which it is separated by the genitalia.

Description

MALE. CL 3.79, CW 2.56. AL 4.48, AW 2.41.

Colour in alcohol: Carapace yellow-brown, yellow posterior to fovea and laterally to above anterior legs, caput dark orange-brown, clypeus and lateral edge of face brown. Chelicerae red-brown, darker distally. Maxillae and labium orange-brown, anterior margins cream. Sternum cream, margins orange. Legs cream-yellow, anterior metatarsi and tarsi darker, coxae cream. Palp cream, cymbium brown. Abdomen cream with dark red-brown pattern dorsally and laterally, typical for genus. Venter darker around spiracle and posteriorly to spinnerets, dark area extending anteriorly from spiracle in two narrow lines almost to epigastric furrow.

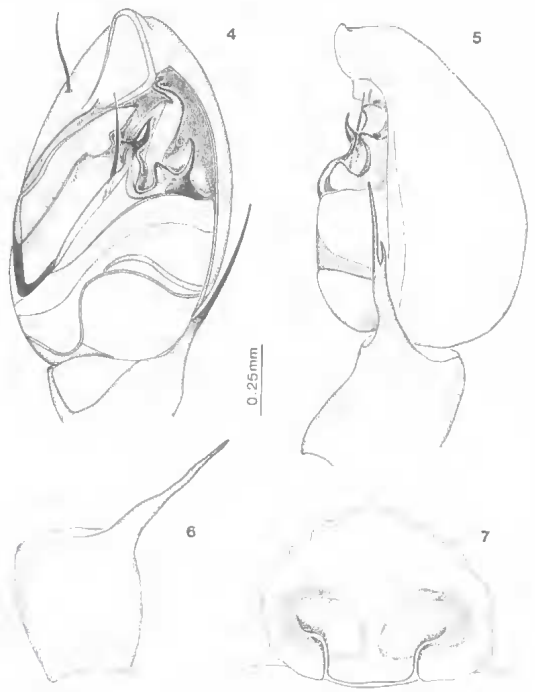
Carapace elongate, longer than broad in ratio 19:13, short imperfect longitudinal fovea [presumably straight in normal specimens]. Striae barely evident, adpressed setae black, upright setae on caput between fovea and ocular region. Eye group occupies less than half width of caput. AME 0.10, ALE 0.17, PME = PLE 0.18.

	Leg 1	Leg 2	Leg 3	Leg 4	Palp
Fe	3.32(2.67)	3.30(2.61)	2.71(2.46)	2.98(2.51)	1.50(1.40)
Pa	1.53(1.59)	1.56(1.48)	1.33(1.39)	1.47(1.50)	0.59(0.65)
Ti	3.40(2.50)	3.23(2.43)	2.24(1.82)	2.74(2.32)	0.65(0.66)
Me	3.19(2.34)	2.99(2.25)	2.40(1.96)	2.59(2.15)	- (-)
Ta	1.67(1.42)	1.42(1.29)	1.02(0.95)	0.97(0.95)	1.26(1.24)
Total	13.11(10.52)	12.50(10.06)	9.70 (8.58)	10.75 (9.43)	4.00 (3.95)

TABLE 1. Leg lengths of *Amaurobioides isolatus*. Values are for holotype ♂ (allotype ♀).

Interspaces: AME-AME 0.05, AME-ALE 0.04, PME-PME 0.11, PME-PLE 0.12, AME-PME 0.14, ALE-PLE 0.08. MOQ; aw: pw: l = 0.26: 0.47: 0.39. Width of clypeus to AME 0.10. Chelicerae with three teeth on both margins. Sternum: L 2.12, W 1.40. Legs. (Table 1) Scopula sparse, particularly on posterior pairs. Leg spination; no spines on patellae or tarsi. Ventral tibiae and metatarsi spines usually paired, occasionally single. Leg I, fe d3 p1, ti v6, me v3. Leg II, fe d3 p1, ti p1 v6, me v4. Leg III, fe d3 p1 r1, ti p1 r1 v5 (v6 on right), me p3 r3 v6. Leg IV, fe d3 p1 r1, ti r1 v3, me p2 r2 v5. Palp, fe d3 p1, pa with one stout bristle dorsally at distal end, ti many long stout bristles, cymbium with three short weak spines prolaterally.

Palp. Tibia with left apophysis having short



FIGS 4-7. *A. isolatus*. 4-5, Left tibial apophysis and cymbium of holotype ♂, 4, ventral, 5, retrolateral; 6, right tibia and apophysis; 7, epigynum of allotype ♀.

FIGS 8-9. *A. isolatus*. 8-9, cleared vulva of paratype ♀ N1992208, 8, ventral, 9, dorsal.

dorsal median secondary prong (Fig. 5), right apophysis lacking accessory prong (Fig. 6), possibly normal state.

FEMALE (as ♂ except as follows).CL 4.21, CW 2.89. AL 6.97, AW 4.16.

Eyes. AME 0.11, ALE 0.20, PME 0.19, PLE 0.20. Interspaces; AME -AME 0.08, AME-ALE 0.06, PME-PME 0.12, PME-PLE 0.14, AME-PME 0.17, ALE-PLE 0.10. MOQ; aw: pw: l = 0.29: 0.50: 0.46. Width of clypeus to AME 0.06. Sternum: L 2.30, W 1.48. Legs. (Table 1)

Epigynum. Fossa broad, anterior margins vaguely defined by what appears to be subcuticular sclerotisation of vulva (Fig. 7). Vulva of paratype N1992208 shown in Figs 8, 9 [allotype not dissected].

Variation

CL of paratype ♂, 3.48; the tibial apophysis of both palps lack accessory prongs and the fovea is straight. CL of paratype ♀; 3.22-4.74, mean 4.35 (n=13).

Etymology

The specific epithet, *isolatus*, reflects the isolated nature of the species distribution.

NATURAL HISTORY

Habits are similar in other *Amaurobioides*. Silk retreats are assumed to be permanent although many spiders collected or observed at Blanche Point in February were wandering over the rocks at night. Several penultimate ♂♂♀♀ were collected in this way and kept alive for some time, one ♂ eventually maturing 3 months later. Most insects placed with the spiders, including moths and terrestrial isopods, were not fed upon. Small flies (mostly *Drosophila*) were more readily accepted (Forster, 1970: 167). Littoral isopods were not tried as a food source (Hickman, 1949). Since then a specimen of *A. isolatus* at Blanche Point lunged at and grasped a small littoral isopod half its size with its anterior legs, hesitated and then released the isopod, retreating to its position at the entrance to the nest. Small flies, often seen resting

in sheltered areas at night along the coast, are another likely food source. Females with spiderlings (26 and 42) in the retreat were found in mid-autumn at both Point Avoid and Elliston while spiderlings and an eggsac were found in separate retreats in November on Kangaroo Island.

BIOGEOGRAPHY

Most areas sampled were within the splash zone on rock faces sheltered from the full velocity of the sea, but retreats were seen in an exposed and treacherous area at Cape du Couedic, Kangaroo Island. Known populations are separated by unsuitable or sandy coastline of varying lengths (Fig. 1). *Amaurobioides* may have dispersed across the intervening ocean by parachuting on silk lines or drifting on flotsam to settle and inhabit their present littoral environments. Forster (1970) considered that claim to be overstated as a number of distinct forms, some sympatric, were present in New Zealand. Platnick (1976) reinforced that in the Laroniinae.

Since Australia's separation and subsequent drift from the other continents of Gondwanaland, the South Australian coastline has been altered by changes in sea level during the last ice-age. The rocky cliffs of Blanche Point and southern coast of Kangaroo Island which now provide a habitat for *Amaurobioides* were formed during the last ice-age over Tertiary deposits and have since been uplifted and weathered (Daily *et al.*, 1979). One population in D'Estrees Bay, Kangaroo Island, consisted of only a few individuals on a small isolated rock outcrop backed by a low sandstone ledge. Similarly, near Port Willunga and 2km south of Blanche Point, individuals exist on a few older limestone rocks remaining on the wide sandy beach which are reached by the normal high tide. Although backed by cliffs, no spiders were found on these. Cliffs also abut the sea in areas north of Blanche Point to Marino Rocks but as yet *Amaurobioides* has not been found. *Amaurobioides* is unlikely to be found from Victor Harbour on the Fleurieu Peninsula to at least Robe in the south-east of South Australia. Extensive sand dunes which now form the Coorong and much of the coast to the south are part of that area built up during inundation by the sea in the Miocene and the Pleistocene, and the few rocky outcrops now present have remained isolated since.

In summary, *Amaurobioides* is one of the few true Gondwanan spider genera left in South Australia presumably because continual changes to the coast have occurred gradually. Littoral spiders have moved with it through dispersal and colonising adjacent new areas of rocky terrain or re-establishing itself into old areas within a suitable distance from the receding or insurgent sea. The sympatry of species of *Amaurobioides* in New Zealand and Tasmania probably occurred by migration over land following uplift or weathering of unsuitable coastline between two separated species and exposing a continuous rocky habitat, rather than by dispersal on silk lines.

ACKNOWLEDGEMENTS

I am grateful to Dr M. Gray (AM) for the loan of types of the Tasmanian *Amaurobioides* and to Mr L.N. Nicolson for commenting on an early draft of the manuscript.

LITERATURE CITED

CAMBRIDGE, O.P.- 1883. On some new genera and species of spiders. Proceedings of the Zoological Society of London 1883: 352-365.

DAILY, B., MILNES, A.R, TWIDALE, C.R., BOURNE, J.A. 1979. Geology and geomorphology. In 'Natural History of Kangaroo Island'. (Royal Society of South Australia: Adelaide).

DAVIES, V.T. 1986. 'Australian spiders, Araneae. Collection, preservation and identification'. (Queensland Museum Booklet No. 14. Brisbane).

FORSTER, R.R. 1970. The spiders of New Zealand. Part III. Otago Museum Bulletin No. 3: 1-184.

1975. The spiders and harvestmen. In Kuschel, G. (ed.) 'Monographiae biologicae: biogeography and ecology of New Zealand'. (W. Junk: Netherlands).

HEWITT, J. 1917. Descriptions of new South African Arachnida. Annals of the Natal Museum 3: 687-711.

HICKMAN, V.V. 1949. Tasmanian littoral spiders with notes on their respiratory systems, habits and taxonomy. Papers and proceedings of the Royal Society of Tasmania 1948: 31-43.

HOGG, H.R. 1909. Spiders and Opiliones from the Subantarctic Islands of New Zealand. The Subantarctic Islands of New Zealand 1, Wellington 1909, 155-181.

MAIN, B.Y. 1981. Australian spiders: diversity, distribution and ecology. In Keast, A. (ed.) 'Ecological Biogeography of Australia' Vol. 2. (W. Junk, Netherlands).

PLATNICK, N.I. 1976. Drifting spiders or continents?: vicariance biogeography of the spider subfamily Laroniinae. Systematic Zoology 25: 101-109.